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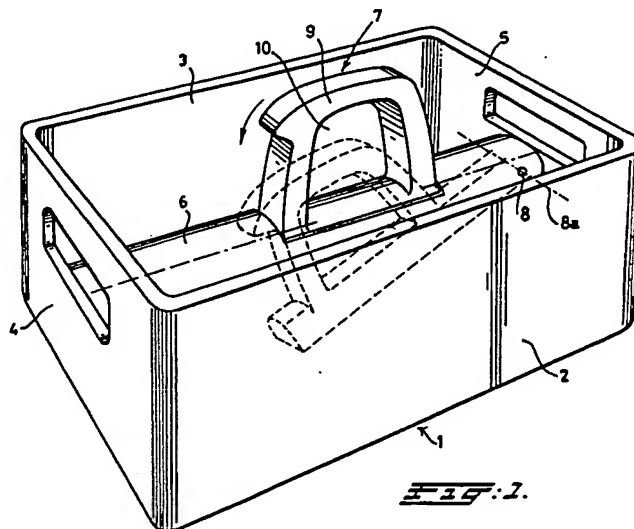
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**BE DE DK FR NL**(71) Applicant: **WAVIN B.V.**  
**Händellaan 251**  
**NL-8031 EM Zwolle(NL)**(72) Inventor: **Benraad, Coenraad Johannes**  
**Bartholomeus Marla**  
**49, Nieuwe Es**  
**NL-7622 BZ Borne(NL)**(74) Representative: **Iemenschot, Johannes**  
**Andreas et al**  
**Exterpatent P.O. Box 90649**  
**NL-2509 LP The Hague(NL)**(54) **Plastic bottle crate with hinged centre handle.**

(57) A plastic bottle crate comprises a bottom (1) and vertical side walls (2-5), a framework provided in the crate, and a movable handle (7) fitted in the centre area of the crate. The handle (7) comprises a U-shaped bracket and a longitudinal bar connecting together the ends of the two legs of the U-shaped bracket and projecting beyond the U-shaped bracket

at both sides. A first projecting part of the longitudinal bar is hinged to the framework (6) of the crate by means of a hinge (8) with a hinge axis (8a) perpendicular to the main plane of the handle. In the carrying position of the handle (7) the second projecting part of the longitudinal bar grips under a bearing lobe which is integral with the framework.

**FIG. 1.****EP 0 486 108 A2**

The invention relates to a plastic bottle crate, comprising a bottom and vertical side walls, and also a framework provided in the crate, and a movable handle fitted in the centre area of the crate and having a handle opening which is bounded at the top side by a handle top edge.

Such a crate is known, for example from German Offenlegungsschrift 2,104,389. In the case of this known crate the handle comprises a U-shaped bracket, of which the legs can move up and down in guide elements disposed at right angles to the bottom of the crate. The handle is movable between a carrying position, in which the handle can easily be gripped, and an idle position, in which the handle is recessed in the framework.

A disadvantage of this design is the susceptibility to soiling of the guides in which the handle can move up and down and the possibility of going out of square, as a result of which the handle does not go into the proper carrying or idle position.

The object of the present invention is to eliminate these problems and to provide a plastic bottle crate whose handle can be moved easily and reliably out of the carrying position into the idle position, and vice versa.

This object is achieved in the case of a plastic bottle crate of the type mentioned in the preamble in that the handle is hingedly connected to the framework.

Through providing a hinged connection between the handle and the framework, it is ensured that parts do not slide over one another in the lengthwise direction, resulting in the above-mentioned disadvantages. In the case of a hinged handle soiling of the parts moving relative to each other is of little or no importance.

Preferred embodiments of the plastic crate according to the invention are claimed in the sub-claims.

The invention will be explained in the example of an embodiment which follows with reference the drawing, in which:

Fig. 1 is a view in perspective of a plastic bottle crate according to the invention with hinged centre handle;

Fig. 2 shows in perspective a specific embodiment of a handle used in a crate according to the invention;

Fig. 3 shows the handle of Fig. 2, in the fitted state, and in the carrying position;

Fig. 4 shows in greater detail the hinge of the handle of Fig. 3;

Fig. 5 is a section through the hinge of Fig. 4 along the line V-V in Fig. 3 and Fig. 4;

Fig. 6 shows a side view of a part of the handle and a longitudinal section of a part of the framework of the crate, an alternative embodiment of the retaining means being shown; and

Fig. 7 is a view, partially in longitudinal section, of the handle of Fig. 2.

The embodiment of a crate according to the invention shown in Fig. 1 comprises a bottom 1 and vertical side walls 2, 3, 4 and 5. Provision is made in the crate for a framework, of which only a centre part 6 extending in the lengthwise direction of the crate is shown. This centre part 6 is U-shaped in cross-section. The side walls of the centre part extend from the bottom of the crate upwards, and at the top are connected to each other by a curved connecting part. The centre part 6 is open at the bottom side. The centre part 6 is fixed to the remainder of the framework, which is not shown further here.

The crate is also provided with a centre grip 7 which at the position of a hinge 8 with a hinge pin 8a positioned at right angles to the main plane of the handle 7 is hinged to the centre part 6 of the framework. The handle is situated partly inside the centre part 6 of the framework and projects with a handle top edge 9, bounding a handle opening 10, above the centre part 6. The handle 7 is movable between two positions, viz. a carrying position (here shown in solid lines), in which the handle opening 10 projects above the centre part 6 of the framework, and an idle position (here shown by dashed lines), in which the handle is partially recessed in the centre part 6.

In the carrying position, the handle can be gripped easily, without the risk of the hand coming into contact with, for example, crown corks of bottles present in the crate, which could lead to injuries. In the idle position the handle falls fully inside the outside contours of the crate. The handle in this position constitutes no obstacle to the stacking of crates or washing of crates in a crate washing machine.

The embodiment shown in Fig. 2 of a handle according to the invention comprises a U-shaped bracket 11 with a closed cross-section and a longitudinal bar 12 connecting together the ends of the two legs 13 and 14 of the U-shaped bracket 11. The longitudinal bar 12 projects beyond the U-shaped bracket at both sides, and forms a first projecting part 15 which at the end is provided with a hinge pin 16. At the other side the longitudinal bar 12 forms a second projecting part 17.

In Fig. 3 the handle 7 is shown fitted in the centre part 6 of the framework, of which only the top part is shown here. The U-shape of the centre part 6, with the side walls 18 and 19 and the curved connecting part 20, is shown clearly in Fig. 3.

The hinged connection 21 between the handle 7 and the centre part 6 is shown in greater detail in Figs. 4 and 5. As already stated, the first projecting part 15 of the longitudinal bar 12 of the handle 7 is

provided with a cylindrical hinge pin 16 extending at right angles to the longitudinal bar 12. Said hinge pin projects slightly beyond the longitudinal bar 12 at the ends. The end faces of the hinge pin 16 are slightly bevelled at the top side. The slanting faces 22 and 23 thus formed run upwards towards each other. The length of the hinge pin 16 is essentially equal to the distance between the outside faces of the vertical walls 18 and 19 of the centre part 6. The shortest length of the hinge pin (at the position of the slanting faces 22 and 23) is essentially equal to the distance between the inside faces of the vertical walls 18 and 19 of the centre part 6.

Formed at the position of the hinge 21, at the top side of the centre part 6, is a half cylinder 24 extending at right angles to the centre part, and having an inside diameter which is equal to the outside diameter of the hinge pin 16. At both ends of said half cylinder 24 round holes are formed in the top part of the centre part 6, said holes having a diameter which is equal to the diameter of the hinge pin 16.

In the curved connecting part 20 of the centre part 6 provision is also made for an opening 25 through which the U-shaped bracket 11 of the handle 7 can project. The handle is fitted from the bottom side of the crate in the centre part 6 which is open at the bottom side. During fitting of the handle, the end parts of the hinge pin 16 projecting beyond the longitudinal bar are snapped into the round holes provided in the top part of the centre part at the position of the half cylinder 24, while the two vertical side walls 18 and 19 are pressed apart temporarily by means of the slanting faces 22 and 23. During the fitting of the handle the U-shaped bracket is inserted through the opening 25 in the centre part 6.

It can also be seen in Fig. 3 that in the carrying position of the handle shown the second projecting part 17 of the longitudinal bar 12 engages under a bearing lobe 26 which is formed by a part of the connecting part 20 of the centre part 6.

The embodiment of the handle 7 shown in Figs. 2 and 3 is also provided with a stop 27 and a locking lobe 28. The stop 27 in the idle position of the handle 7 comes to rest on top of the bearing lobe 26 and thereby prevents the handle from sinking too far into the centre part 6 of the framework. In the idle position the locking lobe 28 falls under the bearing lobe 26 and thereby prevents the handle from falling out of the idle position by itself when the crate is upside down, for example in a crate washing machine.

Fig. 6 shows an alternative embodiment of the retaining means. Fig. 6 shows the first projecting part 15 of the handle 7 and the adjacent part of the centre part 6. At the position of the hinge 21 the

first projecting part 15 is provided with a lobe 29 which in the idle position of the handle falls into a recess 30 of a resilient lip 31 fitted in the centre part 6.

Of course, many other embodiments of the retaining means, which will not be described in any further detail here, are possible.

It can be seen in Fig. 7 that the U-shaped bracket 11 of the handle 7 and the projecting parts 15 and 17 of the longitudinal bar 12 extending from the ends of the legs 13 and 14 of the U-shaped bracket 11 are made hollow, with an essentially closed wall 32. The wall 32 encloses a channel-shaped cavity 33 running through the U-shaped bracket 11 and the projecting parts 15 and 17. The part of the longitudinal bar 12 between the ends of the legs 13 and 14 of the U-shaped bracket 11 has a U-shaped cross-section.

A handle 7 designed in this way can be manufactured in a technically and economically attractive manner by means of the method described in Applicant's Netherlands patent application No. 9002483 entitled: "Method and device for forming a cavity in a plastic injection-moulded product".

#### Claims

1. Plastic bottle crate, comprising a bottom (1) and vertical side walls (2-5), and also a framework provided in the crate, and a movable handle (7) fitted in the centre area of the crate, **characterised in that** the handle (7) is connected to the framework (6) in such a way that it pivots about a hinge axis (8a) situated at right angles to the main plane of the handle.
2. Crate according to claim 1, **characterised in that** the handle (7) is provided in the main plane at one side with a hinge (8) for the hinged connection to the framework (6), and at the other side with a stop part (17) which can interact with the framework (6) for carrying of the crate.
3. Crate according to claim 1, **characterised in that** the handle (7) comprises a U-shaped bracket (11) and a longitudinal bar (12) connecting together the ends of the two legs (13, 14) of the U-shaped bracket (11) and projecting beyond the U-shaped bracket (11) at both sides, and in that a first projecting part (15) of the longitudinal bar (12) is hinged to the framework (6) of the crate, and the second projecting part (17) of the longitudinal bar (12) can interact with a bearing lobe (26) which is integral with the framework (6), and under which

the second projecting part (17) of the longitudinal bar (12) grips in the carrying position of the handle (7).

4. Crate according to claims 1 or 2, **characterised in that** retaining means (28, 26 and 30, 31 respectively) are present to hold the handle (7) positioned relative to the crate in the idle position.
5. Crate according to claim 3, **characterised in that** the U-shaped bracket (11) of the handle (7) and the projecting parts (15, 17) of the longitudinal bar (12) extending from the ends of the legs (13, 14) of U-shaped bracket (11) are made hollow, with an essentially closed wall (32) enclosing a channel-shaped cavity (33) running through the U-shaped bracket (11) and the projecting parts (15, 17).

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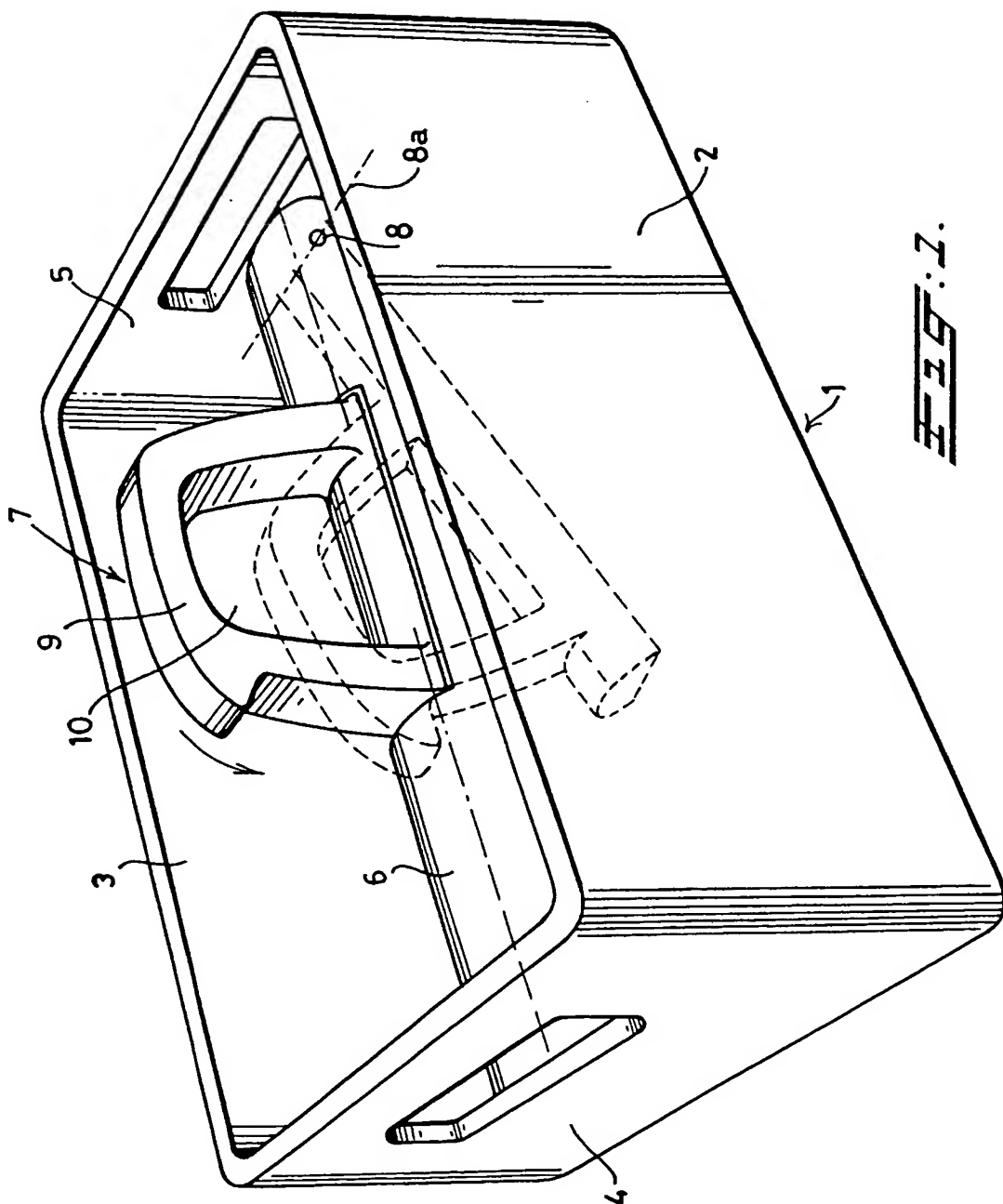
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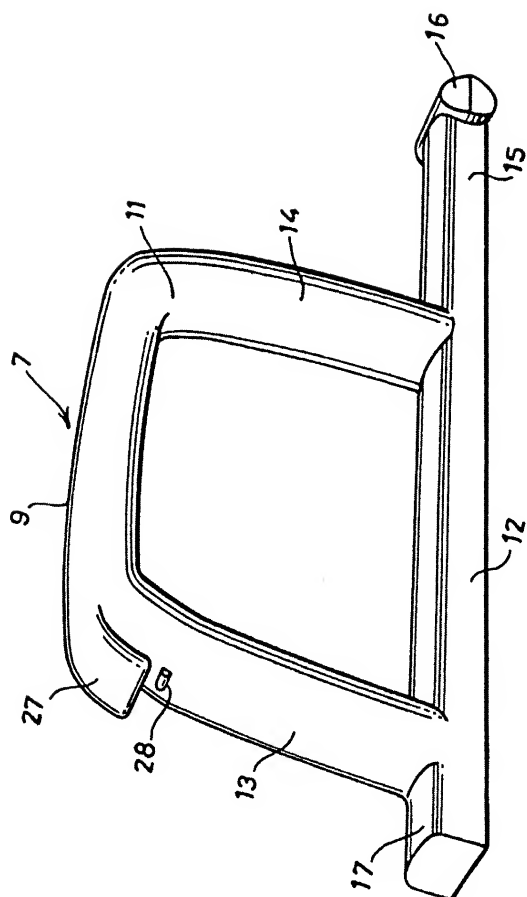
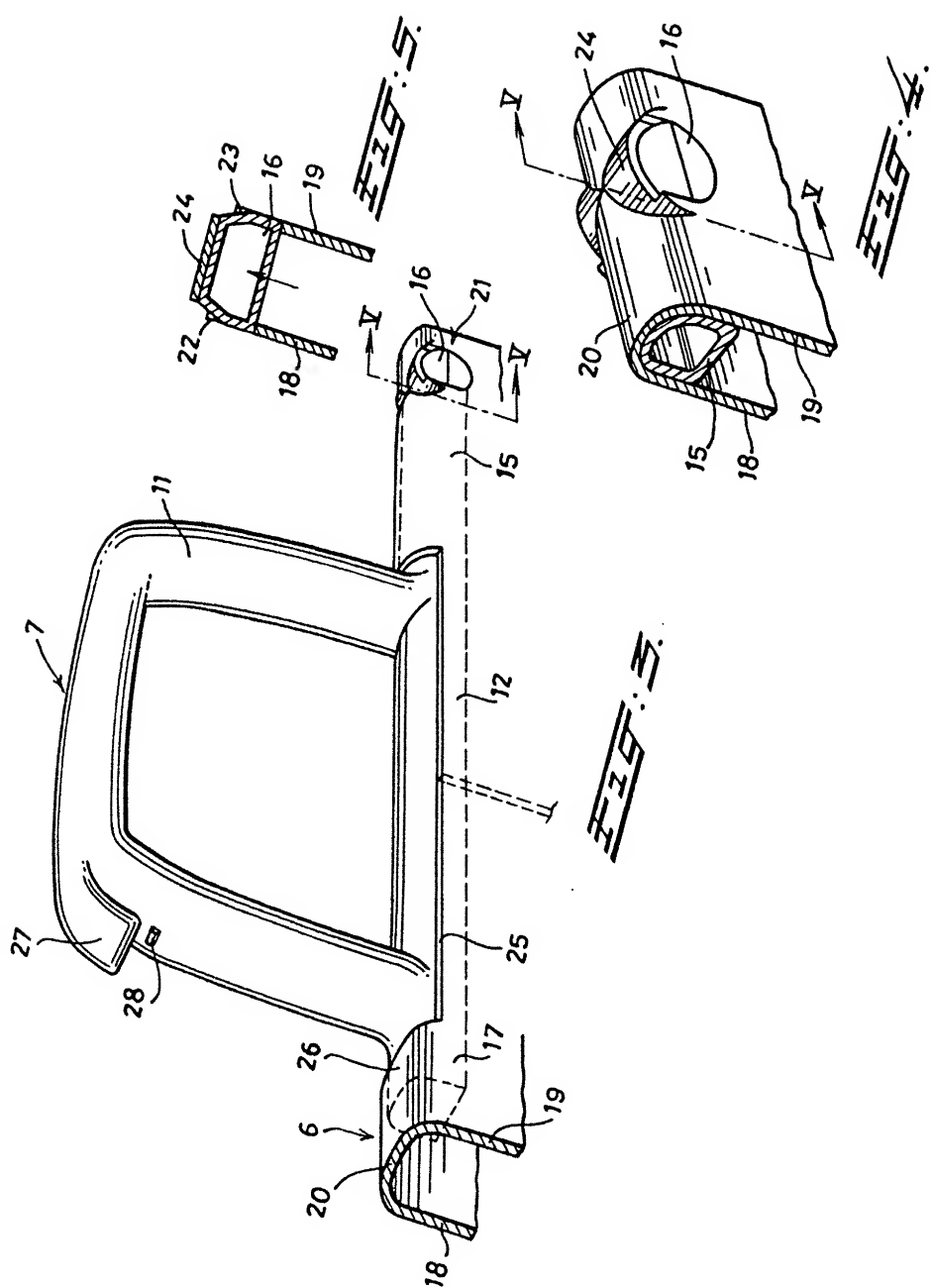


Fig. 2.



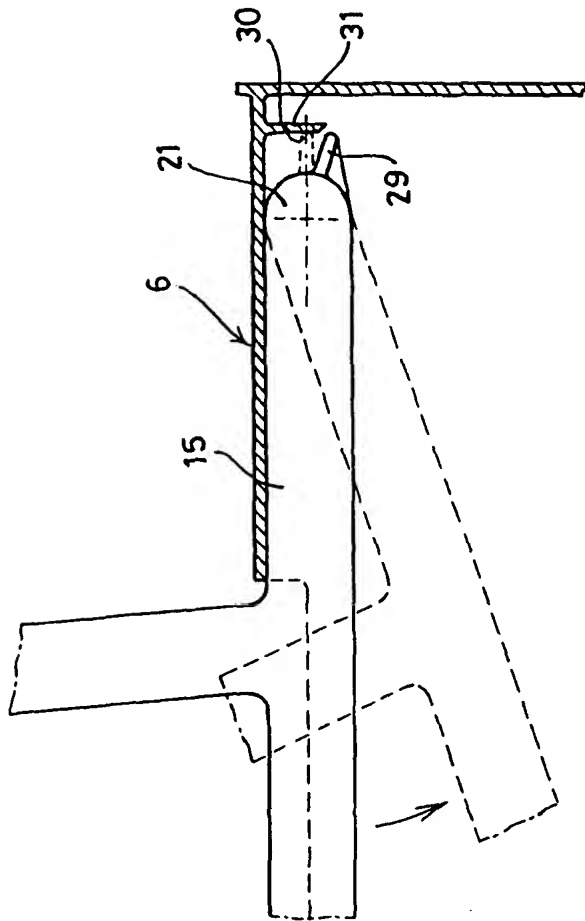


Fig. 6.



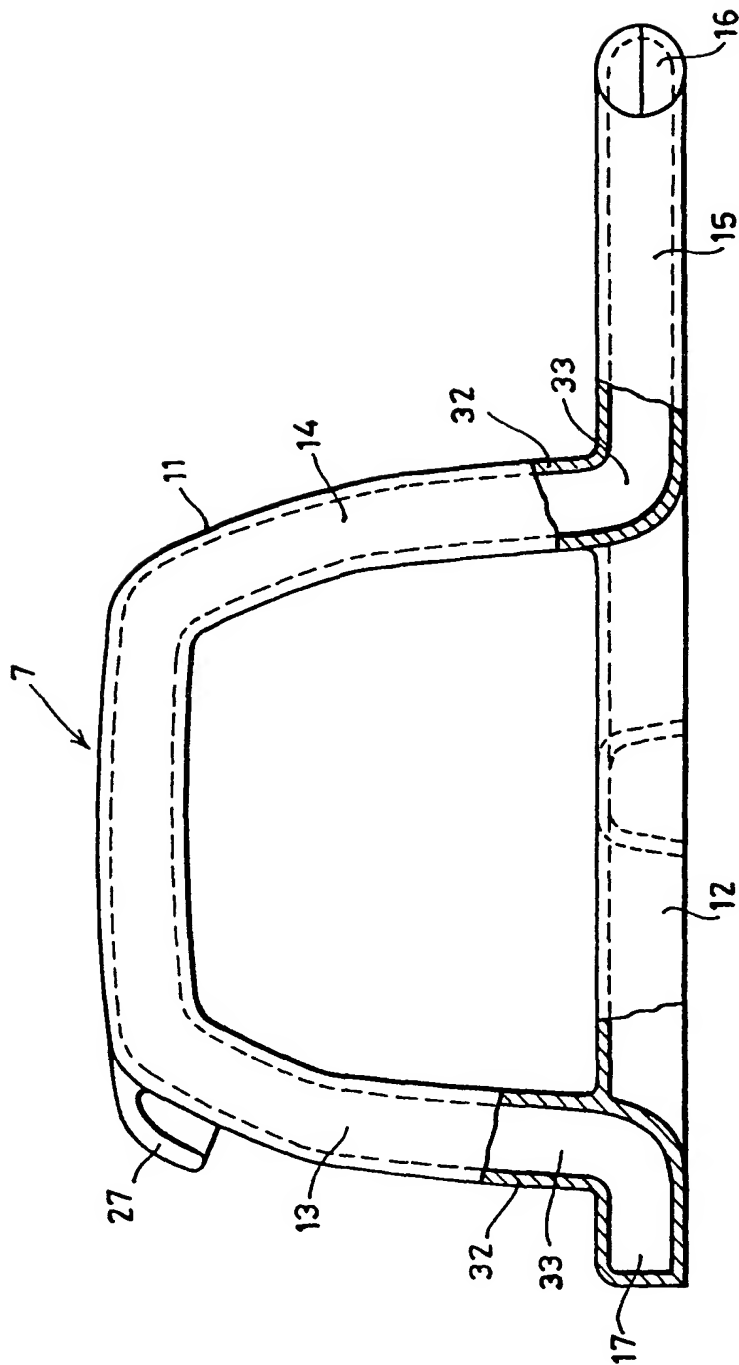


Fig. 7.

